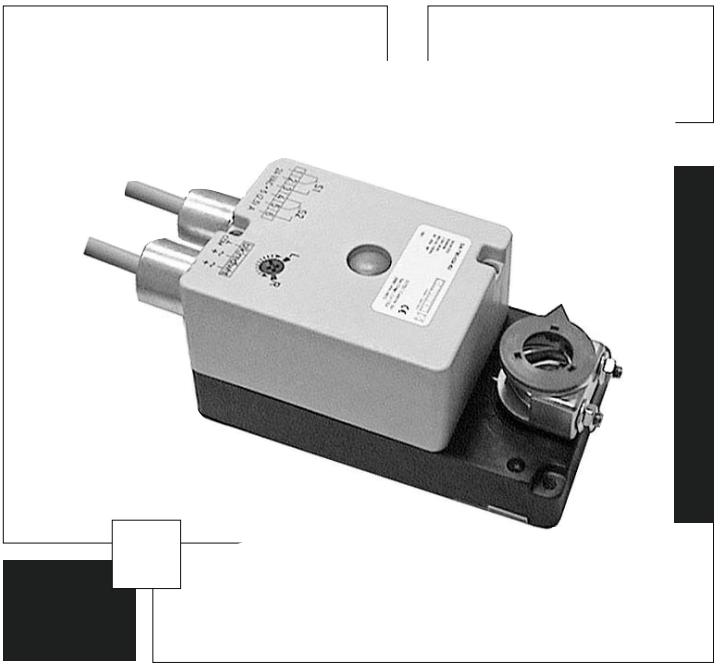
GRUNER

INTEC CONTROLS



GA-P90-024

Direct coupled, non-spring return actuators, 90 in-lb

User Manual

July, 2003

CE

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ISO 9001

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Direct coupled, non-spring return actuators, 90 in-lb

1 Application

Actuators to be easily installed by direct shaft mounting on air dampers, shutters and butterfly valves in ventilation and air conditioning systems. Can be controlled by any compatible electric or electronic analog controller DDC/PLC control or automation system. The actuators should be mounted indoors in a dry environment, relatively free from corrosive fumes.

2 Safety remarks

The actuators are not suitable for use in explosive atmospheric applications!
All service to the actuators (mounting, electrical connection, retrofitting and repair) must be carried out with the power supply disconnected. The electrical connection must be done by a trained and competent person considering the wiring diagrams, local and national regulations. Use copper twisted conductors only. Provide disconnect and overload protection if necessary.
This actuator may only be operated by 24 VAC/VDC!
The transformer **must** be sized according to technical data of the actuator (see section 11). Electronics and controllers must be powered from a separate transformer when controller power is full-wave rectified. Otherwise the controller or the actuator may be damaged.
Always read the controller installation instructions before making any connection!

3 Installation

Direct mounting with V-bolt clamp to the damper shaft (diagr. 1) and fixing with enclosed anti-rotation mounting bracket (diagr. 2).

Shaft: Ø $^{5}/_{16}$" to $^{5}/_{8}$" (Ø 8 - 16 mm)
□ $^{5}/_{16}$" to $^{15}/_{32}$" (□ 8 - 12 mm)

- Turn the damper until the blades are closed
- Disengage the gears by pressing the red button and rotate the clamp until the switching position indication shows 90°
- Tighten the nuts on the clamp (4 - 6 ft-lb)

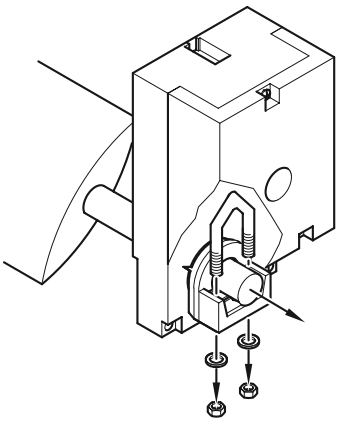


diagram 1

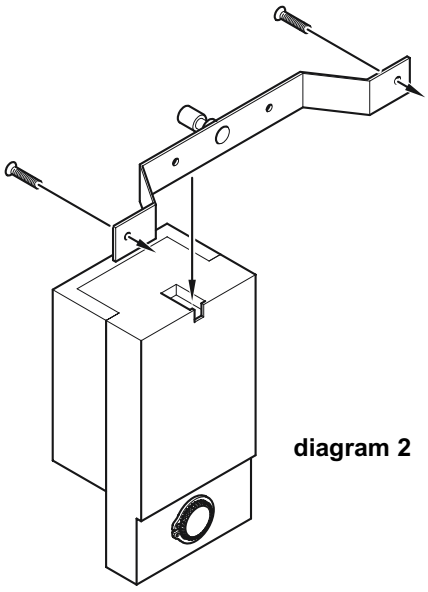


diagram 2

If the damper shaft is too short:
Proceed as in diagram 3:

- Remove the snap ring
- Pull out the V-bolt clamp assembly from the actuator towards outside
- Push the V-bolt clamp assembly from the opposite face
- Refit the snap ring

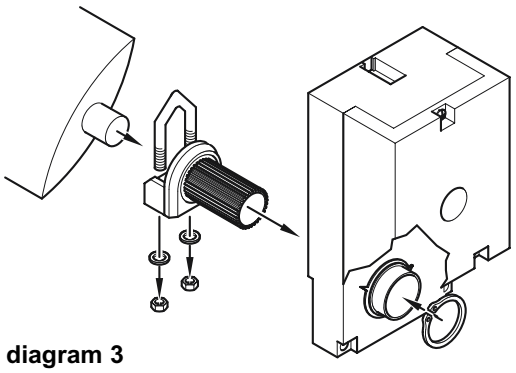
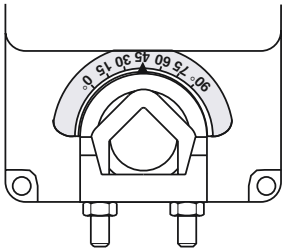


diagram 3

4 Position indication

The damper position can be seen from the scale 0° - 90°. A remote display can be connected to the servomotors with modulating control (see wiring configuration).

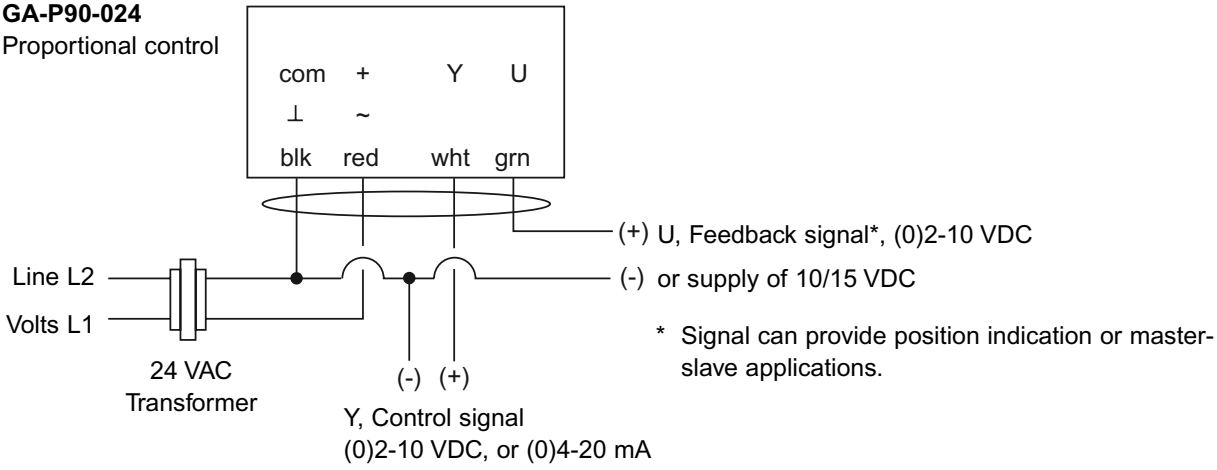


5 Wiring configuration

Notes:

- Actuators are provided with color coded wires.
- Observe polarity on secondary of transformers. All common and signal (-) must be connected in line. Incorrect polarity can cause controller damage or operation error.
- Long wire runs requires a 4-wire configuration (connect common for power and control signal at the actuator or close by). Greater than a 0.2 V drop must be avoided for any common wire.
- Always use a separate transformer when controller power is full-wave rectified.
- Controller and actuators must have separate transformers for paralleled multi-actuator application.
- Provide overload protection for line voltage and disconnect as required.

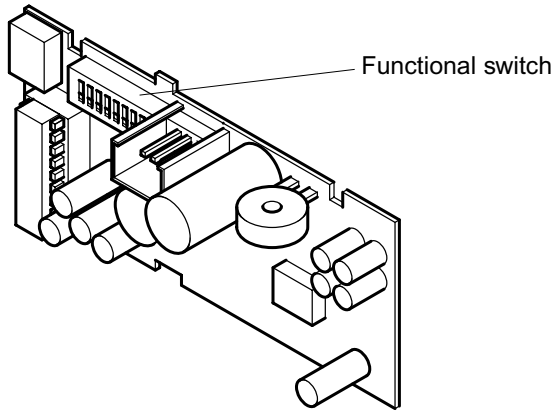
GA-P90-024
Proportional control



* Signal can provide position indication or master-slave applications.

Multiple actuators (maximum quantities)	**GA-P90-024** Proportional
Stacking (torque is additive)	4
Parallel connection (0)2-10 VDC	20
Parallel connection (0)4-20 mA	10
Master-slave via U, feedback signal	10

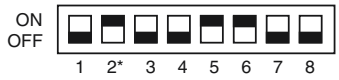
6 Function and signal selection



L/R selector (built-in actuator cover)

Select	Angle of rotation	
R	CW/0-90°	”with increase of
L	CCW/90-0°	control signal”

Signal selector
(dip switch built-on printed circuit-board)



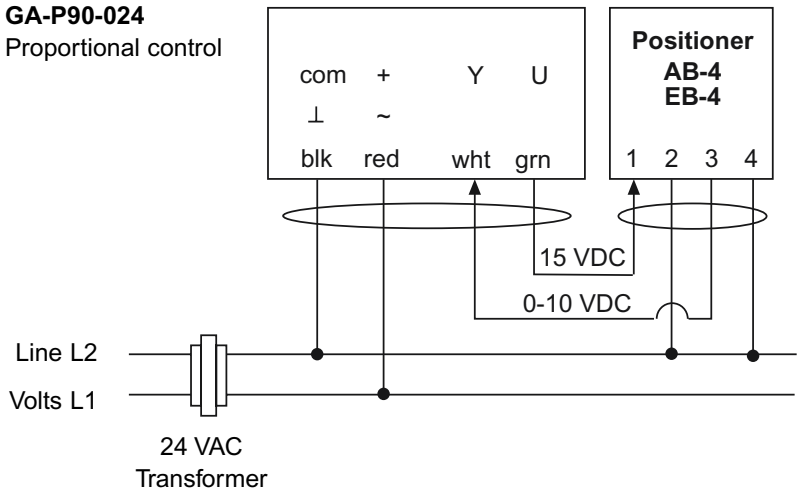
Dip switch setting	Off	On
Y, control signal:		
• 0-10 VDC	1, 4	-
• 2-10 VDC	4	1
• 0-20 mA	1	4
• 4-20 mA	-	1, 4
U, feedback signal or VDC supply:		
• 0-10 VDC	3, 7, 8	5, 6
• 2-10 VDC	7, 8	3, 5, 6
• 10 VDC	3, 6, 8	5, 7
• 15 VDC	3, 5, 6, 7	8

Note:
Any combinations between Y & U are possible.

Factory set: Off = 1, 3, 4, 7, 8
On = 2*, 5, 6
(Y & U = 0-10 VDC)
Switch 2*: Must stay in ”On” position to allow L/R selector to operate

7 Connection of positioner EB-4 or AB-4

GA-P90-024
Proportional control



Attention:
The dip switches of the signal selector must stay in correct position.

input signal 0-10 VDC
output signal 0-10 VDC

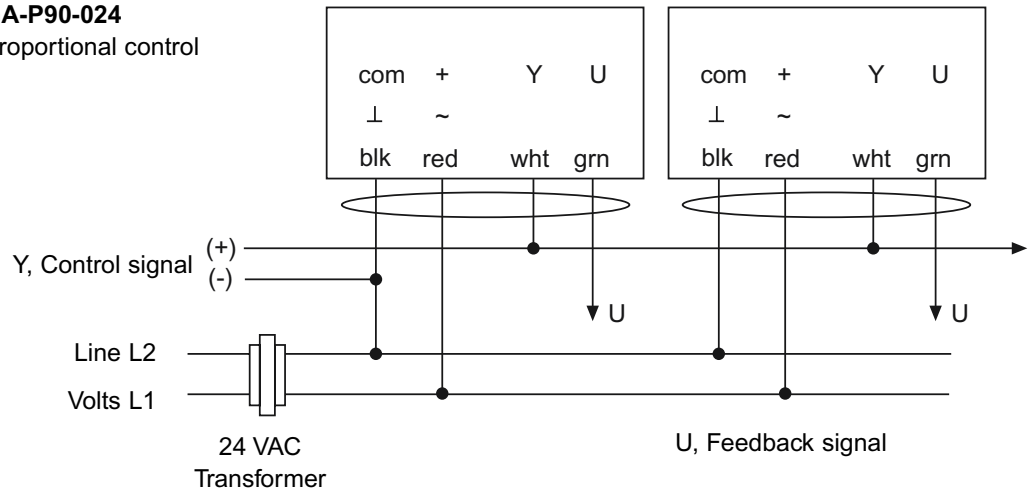
Notes:
- Provide overload protection and disconnect as required.
- Actuator and controller must have separate transformers.
- Set reversing switch L/R as required.

8 Parallel control of two or more actuators

Notes:

- Provide overload protection and disconnect as required.
- Actuator and controller must have separate transformers.
- Set reversing switch L/R as required.

GA-P90-024
Proportional control

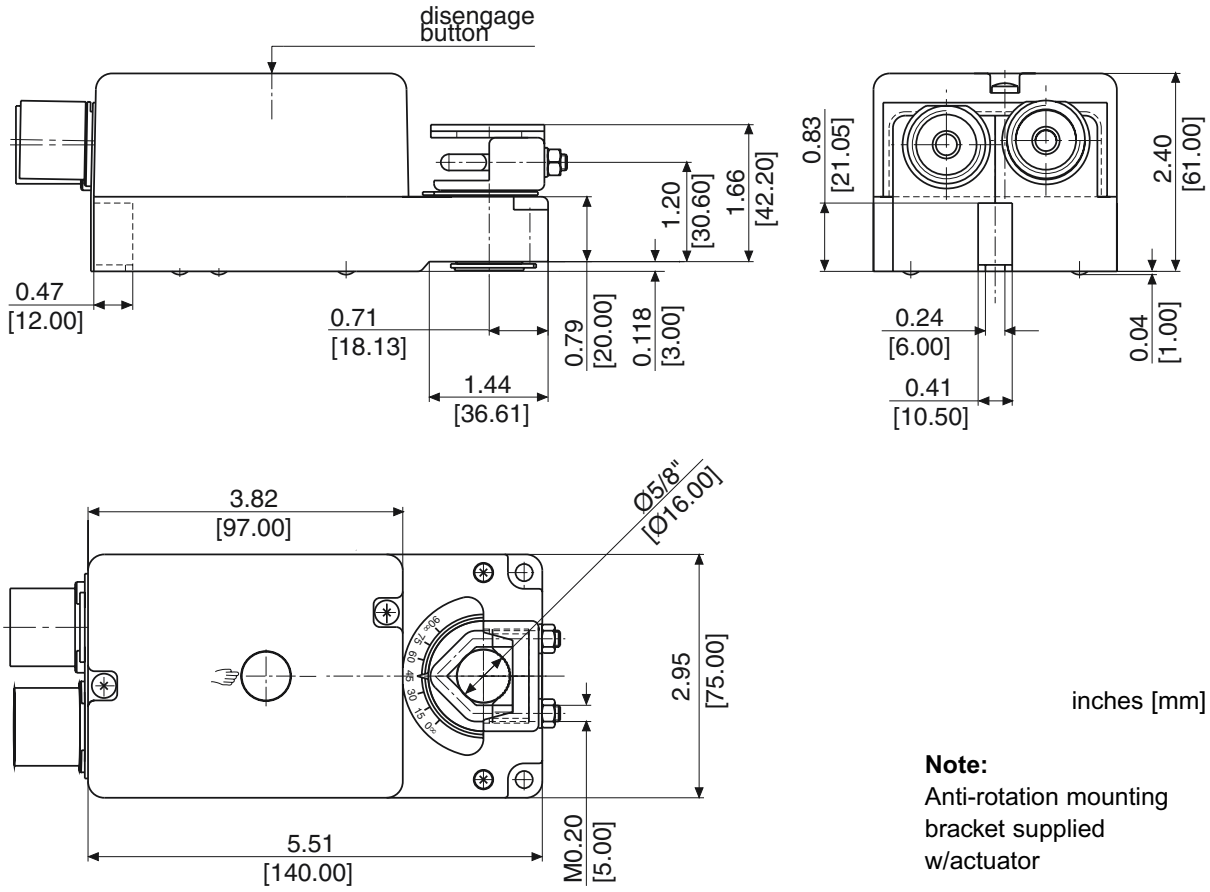


Attention:

- Observe polarity on secondary of transformers.
- Connect all actuator black wires to line of transformer and all red wires to the other leg of the transformer and all white wires together to “Y“ of control signal.

Incorrect polarity can damage controller or cause an error in operation!
Before starting the operation, all electrical and mechanical functions have to be checked!
The actuator and the controller must be powered by separate transformer!

9 Dimensions



inches [mm]

Note:
Anti-rotation mounting bracket supplied w/actuator

10 Ordering information

GA-P90-024 Standard

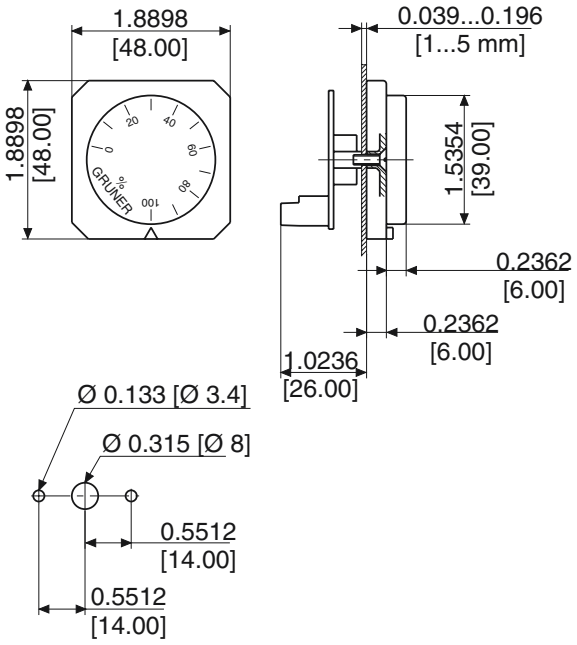
11 Specifications

Control	
Input signal	Proportional (0)2-10 VDC, or (0)4-20 mA, switch selectable
Input impedance	100 kΩ
Feedback signal	(0)2-10 VDC or for use as constant power supply 10/15 VDC 0.5 A (see section 6)
Electrical	
Power supply	24 VAC/VDC ± 20%, 50/60 Hz
Over voltage	Up to 40 V, max. 5 sec.
Power consumption	4.0 W (5.5 VA)
Performance	
Torque	90 in-lb (10 Nm)
Damper size	Up to 23 sq. ft. (2 m^2)
Angle of rotation	0-95°/95-0°, selectable
· CCW(L) and CW(R)	L/R selector, built-in actuator cover
Rotation time	40 to 80 sec/0-90°
Power failure	Stays in last position of operation
Position indicator	0-90° and adj. visual indicator
Synchronization	± 1%
Overload protection	Electronic throughout rotation
Manual override	Built-in disengage button
Motor type	DC motor
Noise level	Max. 40 dB(A)
Environmental	
Permissible ambient	
· working temperature	-22°F to 122°F (-30°C to 50°C)
· storage temperature	-40°F to 176°F (-40°C to 80°C)
· humidity	5-95% RH, non-condensing

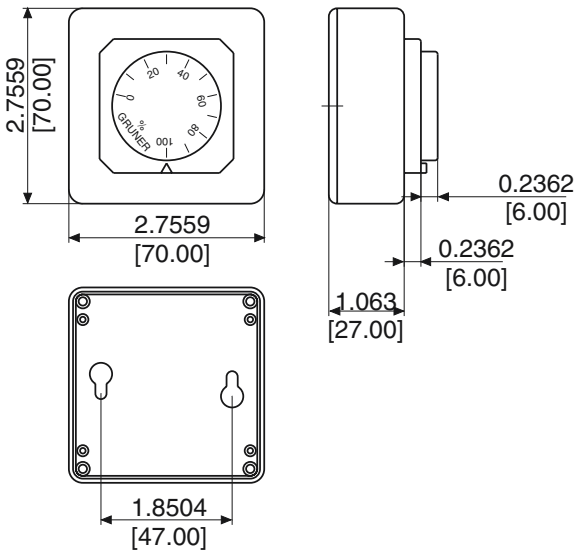
Physical	
Enclosure	
· cover	ABS, UL 94-5V
· base	PA 6.6
· color	Grey and black
· protection	NEMA 2
Mounting position	Any position
Anti-rotation bracket	Included w/actuator
Stacking/paralleling	Refer to table “Multiple Actuators”
Clamp connection to	
· round shaft	Ø $^5/_{16}$" to $^5/_8$" (8 to 16 mm)
· square shaft	□ $^5/_{16}$" to $^{15}/_{32}$" (8 to 12 mm)
Wire connection	3 ft. (0.9 m) appliance cable, color coded
· option, on request	Plenum rated cable
Wire size	18 AWG (0.75 mm^2)
Conduit connector	$^1/_2$", built-in
Dimensions	5.51 x 2.95 x 2.28 in. (140 x 75 x 58 mm)
Weight	1.6 lbs. (0.7 kg)
Manufacturing	ISO 9001 certified
Listings/Approvals	CE UL and CSA
Warranty	Five-year material and workmanship (Two-year standard, three-year conditional)

12 Positioners

EB-4 for panel mounting



AB-4 for surface mounting



inches [mm]

The positioner will be supplied with 15 VDC from the actuator.
Control voltage 0-10 VDC

Wiring diagram see section 7